Space Weather Forecast

Issued on Tuesday, 26 July 2022 at 01:16 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Slight chance of Minor/Moderate radio blackouts on sunlit side of Earth throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been low during the last 24 hours, with X-ray activity confined to isolated small common-class flares. The largest flare of the past 24 hours occurred at 25/0833UTC and emanated from a newly-arrived region on the northeastern solar horizon. This was one of up to eight sunspot regions on the Sun, with most comprising small magnetically bipolar regions.

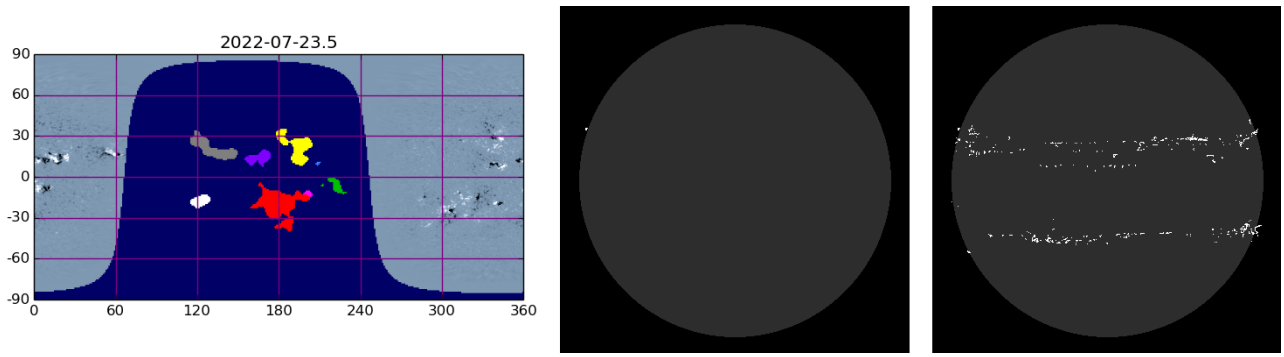

Figure 1: Left: Sounding through the Sun to reveal possible sunspot regions on the far side (dark blue segment) from 23 July, showing numerous large potential active regions on the Sun's far side (multicoloured regions). Also shown are X-ray flares of common-class and above for the past 24 hours (centre) and past fortnight (right), showing the relative lull at present. Centre and right images courtesy of SIDC ROB.

The most significant spot development in the period came from two of these bipolar regions, which both showed areal growth, spreading and some proliferation of spots, but this was not capped by significant flare activity, and the growth stalled in both later in the 24 hours. The most active group of the period on the northeastern horizon currently appears unipolar but is likely to be concealing detail given the narrow viewing angle at present.

Satellite imagery for the period showed a marked downturn in Coronal Mass Ejection (CME) activity in the period relative to the UTC weekend, with all observed events being directed well east and west to no anticipated effect at Earth. No Earth-directed CMEs feature in the forecast.

Solar Wind / Geomagnetic Activity: The solar wind was characteristic of the tail end of a 'coronal hole' fast wind. The solar wind speed accordingly mainly fell during the UTC day of Monday 25 July - through the full range of slightly elevated windspeeds before a late rally. The number of particles in the wind was at normal background throughout, as was their associated magnetic field. The north-south component of this field was generally small in magnitude and erratic.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Observed geomagnetic activity generally fell with time but was well below Minor Geomagnetic Storm G1 throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is likely to remain low with only a slight chance of moderate-class X-ray flares. Barring development, three further regions should leave the Earth-facing side of the Sun in the period, however the eastern solar hemisphere's far side is congested with expected returning sunspot locations, such that activity ought to at least be maintained, pending proper analysis of any arrivals.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast. Solar winds are expected to return to background levels soon after the start of this four-day period. Any other fast wind streams are expected to be very minor in the period and geomagnetic activity is therefore expected to remain predominantly quiet.

Energetic Particles / Solar Radiation: No solar radiation storms are expected given the quiescent facing side at present.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.